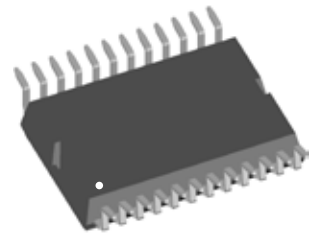
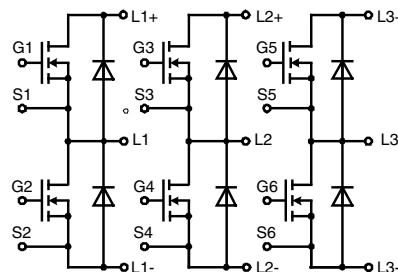


Three phase full Bridge with Trench MOSFETs in DCB isolated high current package

$$\begin{aligned}
V_{DSS} &= 55 \text{ V} \\
I_{D25} &= 150 \text{ A} \\
R_{DSon \text{ typ.}} &= 2.2 \text{ m}\Omega
\end{aligned}$$



MOSFETs

Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	55	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^{\circ}\text{C}$	150	A
I_{D90}	$T_C = 90^{\circ}\text{C}$	115	A
I_{F25}	$T_C = 25^{\circ}\text{C (diode)}$	140	A
I_{F90}	$T_C = 90^{\circ}\text{C (diode)}$	90	A

Applications

- AC drives
 - in automobiles
 - electric power steering
 - starter generator
 - in industrial vehicles
 - propulsion drives
 - fork lift drives
- in battery supplied equipment

Features

- MOSFETs in trench technology:
 - low R_{DSon}
 - optimized intrinsic reverse diode
- package:
 - high level of integration
 - high current capability
 - aux. terminals for MOSFET control
 - terminals for soldering or welding connections
 - isolated DCB ceramic base plate with optimized heat transfer
- Space and weight savings

Symbol Conditions

Characteristic Values

($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)

		min.	typ.	max.	
$R_{DSon}^{1)}$	on chip level at $V_{GS} = 10 \text{ V}$				
	$T_{VJ} = 25^{\circ}\text{C}$		2.2	3.1	m Ω
	$T_{VJ} = 125^{\circ}\text{C}$		3.7	5.3	m Ω
$V_{GS(th)}$	$V_{DS} = 20 \text{ V}; I_D = 1 \text{ mA}$	2.0		4.0	V
I_{DSS}	$V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}$			1	μA
	$T_{VJ} = 25^{\circ}\text{C}$		50		μA
	$T_{VJ} = 125^{\circ}\text{C}$				
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			0.2	μA
Q_g	$V_{GS} = 10 \text{ V}; V_{DS} = 28 \text{ V}; I_D = 100 \text{ A}$		110		nC
Q_{gs}			35		nC
Q_{gd}			25		nC
$t_{d(on)}$	inductive load $V_{GS} = 10 \text{ V}; V_{DS} = 24 \text{ V}$ $I_D = 100 \text{ A}; R_G = 39 \Omega;$ $T_J = 125^{\circ}\text{C}$		100		ns
t_r			110		ns
$t_{d(off)}$			500		ns
t_f			100		ns
E_{on}			0.12		mJ
E_{off}			0.53		mJ
E_{recoff}			0.01		mJ
R_{thJC}				1.0	K/W
R_{thJH}	with heat transfer paste (IXYS test setup)		1.3	1.6	K/W

¹⁾ $V_{DS} = I_D \cdot (R_{DS(on)} + 2R_{Pin \text{ to Chip}})$

Recommended replacement: MTI120WX55GD

Source-Drain Diode

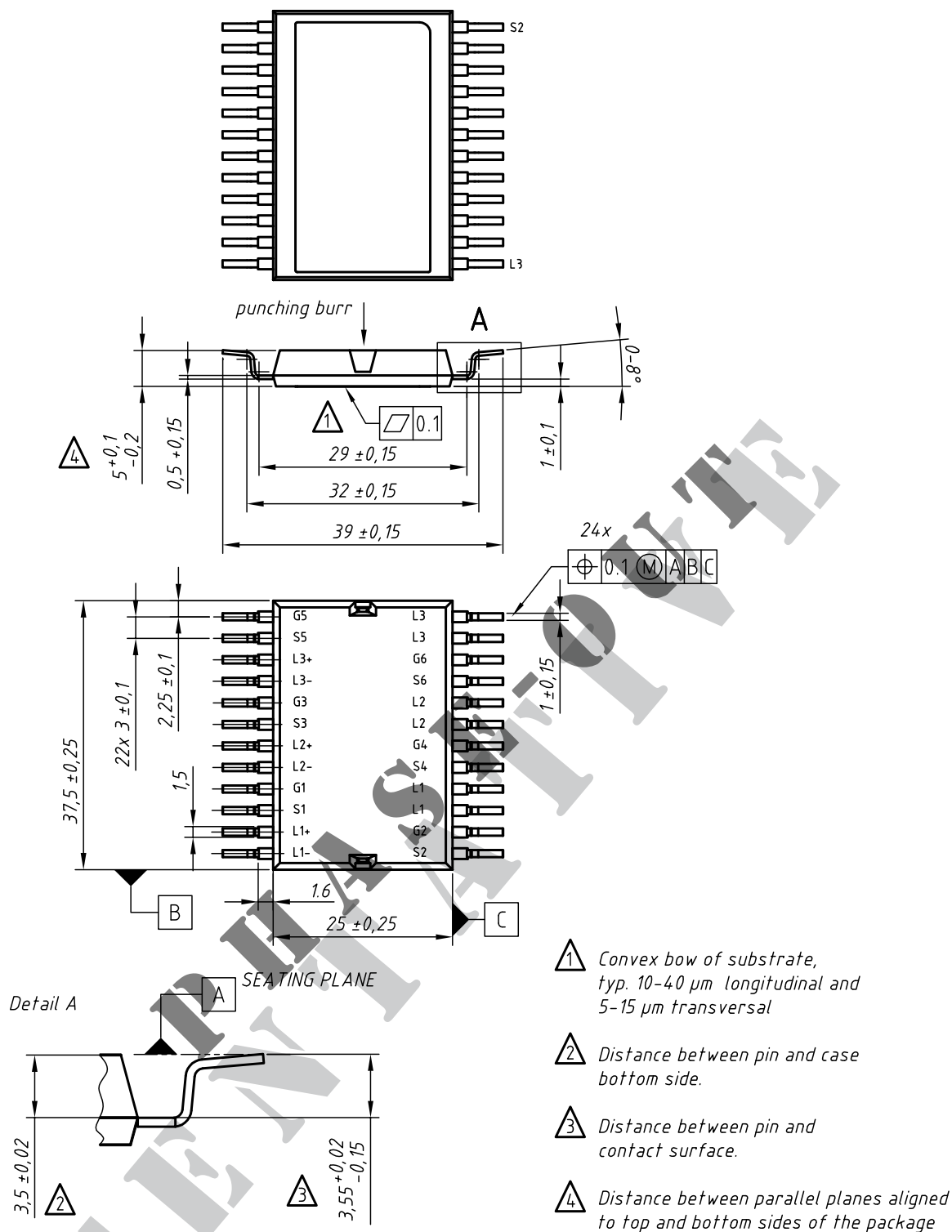
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_{SD}	(diode) $I_F = 80\text{ A}$; $V_{GS} = 0\text{ V}$		0.9	1.2
t_{rr}	$I_F = 100\text{ A}$; $-di_F/dt = 800\text{ A}/\mu\text{s}$ $V_R = 24\text{ V}$; $T_J = 125^\circ\text{C}$		38	
Q_{RM}			0.45	
I_{RM}			22	
				ns μC A

Component

Symbol	Conditions	Maximum Ratings	
I_{RMS}	per pin in main current paths (P+, N-, L1, L2, L3) may be additionally limited by external connections 2 pins for output L1, L2, L3	75	A
T_J		-55...+175	$^\circ\text{C}$
T_{stg}		-55...+125	$^\circ\text{C}$
V_{ISOL}	$I_{ISOL} \leq 1\text{ mA}$, 50/60 Hz, $f = 1\text{ minute}$	1000	V~
F_C	mounting force with clip	50 - 250	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{pin\text{ to chip}}^{1)}$			tbd	m Ω
C_P	coupling capacity between shorted pins and back side metallization		160	pF
Weight			25	g

¹⁾ $V_{DS} = I_D \cdot (R_{DS(on)} + 2R_{Pin\text{ to Chip}})$



contact pin:

- galv. tin plating, per pin side: Sn 10...25 μm , undercoating Ni 0,2...1 μm
- stamping edges may be free of tin
- punching burr: $\leq 0,05 mm$

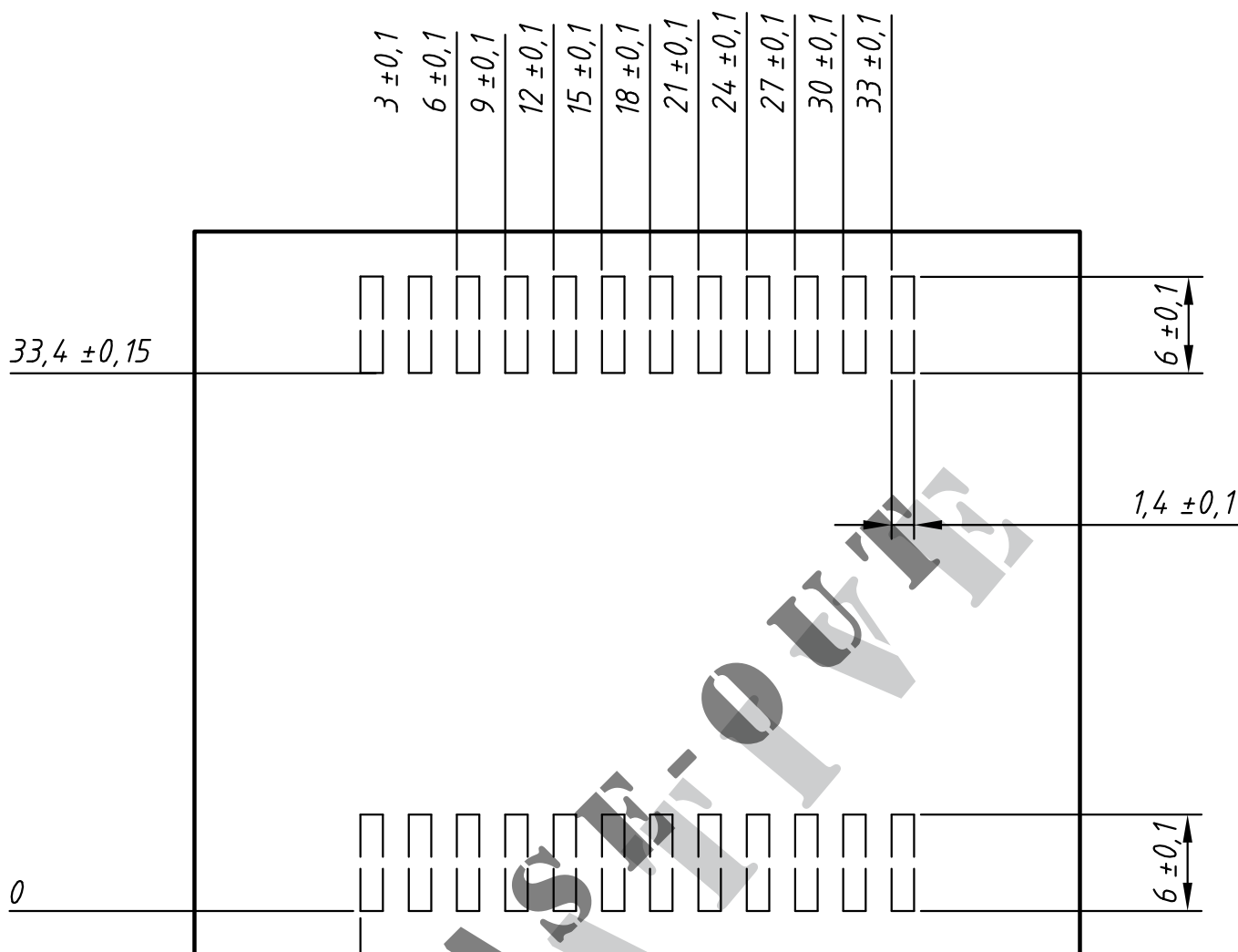
Leads	Ordering	Part Name & Packing Unit Marking	Part Marking	Delivering Mode	Base Qty.	Ordering Code
SMD	Standard	GMM 3x160-0055X2 - SMD	GMM 3x160-0055X2	Blister	28	507 504

IXYS reserves the right to change limits, test conditions and dimensions.

20110307

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Remarks:

- 1) pin layout / dimensions are conditionally
- 2) soldering paste thickness: $200\mu\text{m}$